ADSC/WSDOT Team Minutes

5-Aug-04

Members In Attendance

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Tuttle John	Sinclair Serv.	661-212-1223	tutmud@aol.com

The meeting began at 8:30 AM. Mo introduced Mark Gaines who is the new representative from the WSDOT Construction Office, replacing Virgil Schmidt.

The previous meeting minutes were reviewed. Regarding the centralizers, Alan Macnab clarified that the ADSC members are *developing* details for centralizers. There are no 'approved' centralizers at this time.

Roanoke Noise Wall Constructability

WSDOT has requested comments on the constructability of this project. This work entails adding a noise wall to the top of an existing concrete retaining wall. The walls need to be retrofitted with post tensioned anchors to improve the capacity. Some of the immediate concerns that were brought up include:

- The mast will extend over I-5 traffic. It may be necessary to take the shoulder or a lane of I-5.
- Flushing bell plugs will shoot material out towards I-5. Shields will be necessary to protect traffic.
- The Contractor will require about twenty feet of workspace above on Boylston. This will mean reducing Boylston to one lane.

Some suggestions included using vertical PT anchors on the Boylston side of the wall or compression piles on the I-5 side of the wall.

Action Item: Alan will provide compiled comments from all Drillers to Mo in one week.

Design Topics

WSDOT Implements New Design Memorandum – The new design memo has been implemented. This latest memo specifies a minimum clear distance of six inches between spiral reinforcing bars. When #6 bar at a six-inch pitch is inadequate, #7 or #8 hoops may be used. Vertical reinforcing is also specified to have a clear distance of six inches between bars.

Rebar Cage Diameter Table – Work continues to finalize this table. A question was raised concerning 2'-6" diameter shafts. Can this size of shaft be oversized by 1'-0"?

Action Plan:

- Jeff and Patrick will continue to finalize the rebar cage diameter chart and report back to the team at the next meeting.
- Patrick will investigate whether a 1'-0" oversize shaft can be used with a 2'-6" diameter shaft.

Centralizers

Patrick Clarke provided a handout showing possible centralizer details and spacing arrangements. He is looking for Team Members to provide comments about these details. Alan suggested that Schedule 80 PVC pipe may still prove acceptable. The goal here is to provide enough options to the drillers so that everyone is satisfied. Patrick is going to spend further time looking at the spacing of the centralizers to determine what is acceptable to WSDOT.

Action Plan:

- All members provide comments on the proposed centralizers at the next meeting.
- Alan will investigate the use of Schedule 80 PVC pipe as a centralizer.
- Patrick will send PDF files of the proposed centralizers to Alan. He will also work on determining an acceptable spacing of the centralizers.

Shaft Cage Vertical Tolerance

Mo informed the group that the +6" and –3" tolerances have been included as an amendment to the Standard Specifications.

Action Plan: No further action required.

Shaft Special Provision Updates

Mike provided a copy of the most recent Special Provisions to the Team. A concern was raised that several sections indicate that the Contractor's employee (who is trained in the use of slurry) and the training program needs to be approved by WSDOT. However, WSDOT has no basis or criteria on which they would grant approval or disapproval of this employee or the training program. It was agreed that the submittal should be informational only. Also, Item 6 under the Shaft Installation Plan shall be moved to the Shaft Preconstruction Conference section.

While this specification has eliminated the tremie method of concrete placement, a concern was brought up about placement of concrete in remote areas or in locations that don't lend themselves to using a pump truck. It was agreed to place a box in the special provision that states that the tremie method may still be considered in remote or challenging locations.

Action Plan: Mike will revise the following sections.

- The information in Section 3.02 B 6 will be moved to 3.01 C.
- "As approved by the engineer" will be deleted from 3.01 C 1 a.
- "For approval" will be deleted from 3.02 C 1.
- Add box for tremie method in remote locations.

Threshold of Water Flow into Shaft before Flooding It

It was agreed that there is no reliable or adequate way to gauge the rate of water flow into a shaft. Instead, it was suggested and agreed to that a threshold of 6" of water is reasonable. If less than 6" of water is present in the bottom of the shaft excavation, it will be considered a dry hole. If the water level exceeds 6", it will be considered a wet hole and it may be necessary to flood the excavation.

Action Item: Mike will update Section 3.03 L accordingly.

Modifications of CSL End Caps to Accommodate Shaft Bottom Pressure Grouting

Alan submitted details showing a valve system that can be used at the bottom of the CSL tubes to facilitate bottom grouting. Mark Etheridge pointed out that if PVC caps were used instead of steel caps, it would be easy to drill through the end cap and grout the base of the shaft. This is less expensive than using a valve at the bottom of the tube. The Team agreed that switching to PVC caps is an appropriate way to address bottom grouting of shafts.

Action Item: Mike will specify watertight threaded PVC screw caps under Section 2.05.

Softening Top of Shafts' Soils with Augers

Jim reported that he had some concerns about the effect on the boundary conditions if this was done. If the initial soil augering is performed with an auger that is smaller in diameter than the shaft size, it may be acceptable to WSDOT. Some ADSC members weren't sure that there was really a need for this. They will discuss and determine if this should be pursued further.

Action Item: Alan discuss with ADSC members and see if this should be pursued further.

Auger-cast Piling

Tom reported that there is a survey being sent to DOT's regarding the use of auger-cast piling (past use, future use, interest, etc.) Jim indicated that WSDOT may consider use of auger-cast piles for retaining walls and noise walls. The quality control is a concern for use on bridge structures. Tom asked who at WSDOT could best respond to this survey. This survey will be sent to Patrick Clarke.

Action Item: Tom will send auger-cast piling survey to Patrick.

Undetected Shaft Soft-Bottom Due to Over-excavation

Mo discussed the WSDOT concerns with soft bottoms occurring below the bottom of the reinforcing cage. On shafts that have substantial end bearing capacity, a soft bottom can lead to excessive settlement. This is a concern when the shaft is over excavated below the plan tip elevation; the soft bottom occurs below the ends of the CSL tubes and is impossible to detect. One possible solution to this concern is to require post grouting at the base of all shafts. The ADSC members were not in favor of standard post-grouting procedures. Over excavation should not be a problem with a trained drill rig operator since they have been told not to drill below plan tip elevation. The ADSC members will reinforce the importance of this with their crews.

Action Item: All ADSC members will further work with their drill crews to insure that shafts are not being overexcavated and to improve quality control for clean shaft bottoms.

Revision Proposal to Specials 3.09

Mo raised a concern about the shaft repair/coring specification. The coring is often an integral part of the repair procedure. If grouting is necessary, the Contractor normally uses the core hole as either a grout injection port or vent. Because of this, it should be up to the Contractor where to install core holes. The Team agreed that this section of the specifications should be modified. Section F shall be modified to state that the Contractor shall provide a repair procedure or a plan for further investigation. This removes any vagueness about what is to be done after a shaft is determined to be unacceptable. Further, it allows any coring of the shaft to fit in with the future repair procedure that may be necessary if a defect is confirmed.

Action Item: Mike will modify Section 3.09 E to state that the Contractor will provide a repair procedure or plan to obtain acceptance of the contracting agency.

Revision Proposal to Specials 2.04 A

Mo suggested that we eliminate mineral slurries based on research results of Dr. Dan Brown indicating substantial losses in skin friction when bentonite is used. Several of the ADSC members, along with John Tuttle, recommend against this action. In certain situations, mineral slurries are still a good option. Occasionally the Drilled Shaft Contractor can sell the used mineral slurry after the project is completed. There are also certain soil types where mineral slurries are a better choice than polymer slurries. The Team elected to leave this portion of the Special unchanged.

Action Item: No action required.

Future Meeting Dates

Future meeting dates for the remainder of this year are:

- September 16
- October 28
- December 9